



# ANNUAL REPORT

OF THE

Medical Officer of Health

FOR 1893.

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MR. MAYOR, ALDERMEN, AND COUNCILLORS,—

In my last Annual Report I drew your attention to an inspection I had made of the district of Pimlico, and described the condition of things found there. You will be pleased to learn that during the past year radical changes have taken place in that very unsavoury neighbourhood. One tenement was closed with consent of the owner, four houses were closed by order of the magistrates, and all their back tenements have since been razed to the ground. These are still in process of reconstruction, and consequently remain empty. Three other miserable structures have also been pulled down, and the surfaces they covered converted into back yards; and thus light and air are let into the backs of the houses of which they formed part.

Another group of eight houses, and the worst in Pimlico, have passed into the possession of new owners ; and who very wisely began at once to carry out my requirements. Everything has now been done that the law empowered me to ask for, but it is a great pity that this property cannot be purchased and pulled down. The site is splendidly suited for the erection of baths and wash-houses, and just where such institutions are most needed. This property is in the market and can be bought at a very low figure. While we are spending so much money in improving the more prominent parts of the town, surely a little might be laid out on Pimlico.

Nearly every owner of property in Pimlico has done something to render his houses better fitted for human habitation, and the remainder will not be overlooked.

Last year I inspected another district, viz., Lower Union Lane. This, with some few exceptions, is of a very different character from Pimlico ; not only in respect of tenements, but of occupants. Two of the owners, on my drawing their attention to the condition of their properties, at once closed them, and will convert them to other purposes ; and another met me on the spot and promptly carried out my suggestions. There yet remain several properties in this district which have not been attended to, but they will not be forgotten.

All through the summer and autumn I have been visiting yachts, trading vessels, and fishing craft coming from foreign ports, and, fortunately, to no purpose, inasmuch as no sickness of any kind, not to mention cholera, was found on any of them. If, as we have been told, the Government will expect us to visit all shipping, home as well as foreign, during 1894, it will mean a very serious business and perhaps expense. During the yachting season we have scores of yachts coming here for a few hours or few days, and, if the owners are compelled to stay on board until I can be found and go out to inspect them, we shall have lively times. It seems to me that to insist on visiting home sailing craft at each harbour, and to allow untold thousands to come and go by train without the slightest supervision, will be needless interference and very suggestive of a certain proverb relating to gnats and camels. If such is to be the practice, the least the Government can do is to warn the home shipping and yachting population of what they may expect during the season.

You may often have noticed the French sailors who visit Torquay every autumn and perambulate our streets with long strings of onions for sale.

During the past autumn I received a hint that these peripatetic importers of the incomparable onion were not lodged as nicely as I should like. I looked them up and then discovered one of the reasons why the foreign onions are so much cheaper than those of home growth. The individuals in question rented a stable and loft at little more than nominal rent. In the stables were stored the onions, and in the loft the eight men and boys slept on straw, cooked their food, and worked the onions into strings. The loft and stable were of the most miserable and tumble-down description, the walls damp and dirty, and the roof very defective; in fact the whole structure was a ruin. I need hardly say that this mode of housing human beings, not to mention onions, did not come up to my standard of sanitary surroundings, and they had to seek fresh quarters.

There is one other matter to which I will just draw your attention. For years the town of Torquay has been depositing all its ash pit and kitchen refuse on Windmill Hill, which is situated in St. Mary-Church parish. Your neighbour has at last been obliged, *nolens volens*, to request you to discontinue this practice, and to remove the heap that is accumulated there now. This will open up the question "What to do with our ash pit refuse?" and one not easy to answer. At present it would seem that a destructor will be the only means of solving the difficulty, but where to place it? This is a matter of urgency and will require very careful consideration.

The number of births registered in 1893 was 520, or 20·3 per 1000. This is 14 less than in 1892, 35 less than in 1891, and 40 less than the average for the ten years from 1881 to 1890. The annual number of births is steadily diminishing and is 111 less than in 1881, and 122 less than in 1878.

The number of deaths which have taken place is 435. This is 15 more than in 1892, and is 39 more than the average for ten years. Assuming that our population is 25,500 (the last census being 25,488), the mortality for the past year will be 16·6 per 1000. Of these, 57 occurred among visitors and strangers, so that, making the usual deduction, the rate will be 14·7, as compared with 14·4 in 1892 and 13·8 in 1891.

The zymotic death rate will be (13 deaths) ·5, which is less than in 1892.



# Death Rate for Torquay, as required by the Local Government Board for 1893.

NAME OF DISEASE		UNDER 5 YEARS		OVER 5 YEARS	
Small Pox	...	0	...	0	...
Scarlatina	...	0	...	0	...
Diphtheria	...	0	...	1	...
Membraneous Croup	...	2	...	0	...
Typhus	...	0	...	0	...
Enteric	Fevers	0	...	0	...
Continued		0	...	0	...
Relapsing		0	...	0	...
Puerperal		0	...	0	...
Cholera	...	0	...	0	...
Erysipelas	...	0	...	0	...
Measles	...	0	...	0	...
Whooping Cough	...	8	...	0	...
Diarrhoea and Dysentery	...	2	...	0	...
Rheumatic Fever	...	0	...	1	...
Ague	...	0	...	0	...
Phthisis	...	3	...	67	...
Bronchitis, Pneumonia, and Pleurisy	...	18	...	46	...
Heart Disease	...	0	...	35	...
Injuries	...	0	...	17	...
All other Diseases	...	61	...	174	...
		94		241	

Total for 1893 ... 435

These figures should be compared with those of previous years, as seen in the following table:—

## CAUSES OF DEATH IN TORQUAY FOR TEN YEARS.

CAUSES.		'84	'85	'86	'87	'88	'89	'90	'91	'92	'93
Small Pox	...	0	0	0	0	0	0	0	0	0	0
Scarlatina	...	4	1	0	1	0	1	0	0	0	0
Diphtheria	...	0	0	0	0	0	0	0	2	0	1
Membraneous Croup	...	1	2	2	0	0	1	1	2	1	2
Fevers	Typhus	0	0	0	0	0	0	0	0	0	0
	Enteric or Typhoid	1	0	3	1	1	1	1	2	2	0
	Continued	0	1	0	0	0	0	0	0	0	0
	Relapsing	0	0	0	0	0	0	0	0	0	0
	Puerperal	0	1	1	0	0	1	0	0	0	0
Cholera	...	0	0	0	0	0	0	0	0	0	0
Erysipelas	...	0	2	1	3	1	0	0	1	0	0
Measles	...	3	5	4	0	12	2	1	3	8	0
Whooping Cough	...	1	5	3	2	1	0	16	0	2	8
Diarrhoea and Dysentery	...	15	2	3	3	1	3	1	1	3	2
Rheumatic Fever	...	0	1	5	1	3	1	0	4	1	1
Ague...	...	0	0	0	0	0	0	0	0	0	0
Phthisis	...	41	60	61	52	64	52	67	67	60	70
Bronchitis, Pleurisy, and Pneumonia	...	64	55	59	38	52	51	63	53	64	64
Heart Disease	...	32	35	39	39	39	48	36	44	38	35
Injuries	...	5	8	3	9	6	10	8	9	13	17
All other Diseases	...	218	218	228	184	228	199	235	214	228	235
Total	...	385	396	412	333	408	370	429	402	420	435

The number of deaths among visitors, patients sent to the Torbay Hospital, and to the various homes for the sick, tramps, and other strangers, is 57; this is six more than last year. The causes were phthisis, 29; bronchitis, &c., 6; heart, 4; injury, 2; and other diseases, 16.

**COMPARATIVE TABLE OF THE AGE AT WHICH DEATH OCCURRED.**

	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.
1884	385	98	31	12	22	85	137
1885	396	65	37	15	25	114	140
1886	412	73	27	9	37	124	142
1887	333	54	18	9	36	85	131
1888	408	68	36	12	35	120	137
1889	370	67	25	18	28	102	130
1890	429	81	37	16	30	112	153
1891	402	55	25	19	27	105	171
1892	420	74	34	8	25	103	176
1893	435	69	25	9	28	151	153

**SMALL POX.**—We have had no cases of Small Pox for years, but it was by the greatest luck that we did not have a case last year. In the month of April I received notice from the Medical Officer of Health of an important town on the Welsh coast, that a young man had been admitted to the Small Pox hospital, who had only left Torquay two days previously. I went at once to the address, and found it occupied by a family of several persons, and three lodgers (all assistants in the same shop as the person in question); and all were in perfect health. After a few preliminary enquiries, I stated the object of my mission, whereupon I soon learnt the origin of their friend's misfortune. It appears that the patient was engaged to be married to a nurse in a hospital in a large manufacturing town in Yorkshire, and where there had been many Small Pox patients on whom she had been attending, and she had been often writing to him, after the manner of betrothed. His friends here had suggested to him that this correspondence was not unattended with risk; but he had replied that the letters were all disinfected before being posted, &c. If they had been subjected to this treatment, it must have been very inefficiently done, as the result doth testify. Two or three days after, and we should have had the credit and expense of the case here. Strange to say, the last case of Small Pox in the town, viz., in March, 1884, was imported here under almost precisely similar circumstances. *Quis custodiet ipsos custodes?*

**SCARLATINA.**—We have had a great number of cases, particularly in November and December; indeed, so numerous did they become, that I was obliged to ask for the closure



of the two public schools principally affected, and with good results. All the cases were of an exceedingly mild type, and I have no doubt that some cases escaped observation altogether, and that these must have the credit of spreading the disease more than it need have been. I have been able to trace the source of the infection in but few instances, and, except on the hypothesis of unrecognised cases moving about, I do not see how the mischief can be accounted for at all.

**DIPHTHERIA.**—There have been exactly five cases, two of which had a distinct history of importation. In the homes of the three others, defects enough were found to account for anything. Without going into the vexed question of the origin of Diphtheria, I should like to point out that in these cases I noticed an absence of air space around each house. Either tall shrubs, trees, or the walls of other buildings prevented sun and air from exerting their influence in keeping things sweet and clean. In two instances the back yards were reduced to damp and dismal wells by the height of the surrounding structures, so that neither sun nor wind could reach them.

**TYPHOID.**—Eleven cases in all. Six were undoubtedly imported, four could be accounted for by the condition of the homes, and in one I could trace no satisfactory reason whatever. When we recollect the long drought and the subsequent heavy rains, and knowing what a test that is for a town like Torquay, it says a good deal for the sanitary condition of the individual houses that we have been so free from Typhoid. Ten years ago a like state of weather would have been followed by a dozen or twenty cases. It proves that we have not been working in vain.

**WHOOPING COUGH** contributes a large share to the zymotic death rate, but at present we have really no control over this disease.

**DIARRHŒA.**—There has been very little. One fatal case occurred in June and the other in August, and both patients were young children.

**WATER SUPPLY.**—Like nearly every other town, our supply ran short owing to the exceptional drought of the past summer, and we had to be put on the intermittent service for a time. I have had to draw your attention to the nature of our water supply, to its quality and to its quantity, and I have spoken here and elsewhere on the subject, and need now only remark that my suggestions and proposals have been treated by you with the attention and consideration so important a matter

deserves. You have, after due deliberation, endeavoured to effect radical alterations and improvements, and I trust, when the time comes for my writing another annual report, that I shall be in a position to congratulate you on the success of your efforts.

**FACTORY AND WORKSHOPS ACT, 1878-1891.**—Every effort has been made by enquiry and circulars, but the system of work this is intended to reach does not seem to be in vogue in this neighbourhood.

**SALE OF FOODS ACT.**—A test raid has been made by the County Police and eight samples of milk taken, one of which was found to be adulterated, and a fine inflicted.

I have made the usual general inspection of the district and paid special attention to certain divisions. The bakehouses have all been visited and found satisfactory.

**RETURN OF NEW CASES OF SICKNESS MADE BY POOR LAW  
MEDICAL OFFICER; AND OF NEW PATIENTS RECEIVED  
IN THE TORBAY HOSPITAL, AS REQUIRED BY THE LOCAL  
GOVERNMENT BOARD.**

NAMES OF DISEASES.				POOR LAW.		HOSPITAL IN-PATIENTS.	
				Aged under 5 yrs.	Aged 5 yrs. and up.	Aged under 5 yrs.	Aged 5 yrs. and up.
Small Pox	...	...	...	0	0	0	0
Scarlatina	..	...	...	2	2	0	0
Diphtheria	...	...	...	0	0	0	0
Membranous Croup	...	...	...	0	0	0	0
Fever	{	Typhus	...	0	0	0	0
		Enteric or Typhoid	...	0	0	0	1
		Continued	...	0	0	0	0
		Relapsing	...	0	0	0	0
		Puerperal	...	0	0	0	0
Cholera	..	...	...	0	0	0	0
Measles	...	...	...	0	0	0	0
Erysipelas	...	...	...	1	0	0	0
Whooping Cough	...	..	...	0	0	0	0
Injury	...	...	...	0	0	0	45
Other Diseases	...	...	...	19	214	4	206
				22	216	4	252

Total—Poor Law, 238 ; Infirmary, 256.

I append the ninth report of the Sanatorium, the Annual Report of your Sanitary Inspector, which gives the details of his work, and Mr. Chandler's abstract of meteorological observations, and remain,

Mr. Mayor and Gentlemen,

Your obedient Servant,

PAUL Q. KARKEEK, M.R.C.S. & L.S.A.,

*Medical Officer of Health.*

*Torquay, February 6th, 1893.*





# The Medical Officer's

## Ninth Report on the Sanatorium

*For the Year ending 25th March, 1893.*

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TO THE CHAIRMAN OF THE SANITARY COMMITTEE.

SIR,

During the past financial year 50 patients have been admitted to the Sanatorium, of whom two died and the remainder were discharged cured. Of these 34 were suffering from Scarlatina and 16 from Enteric Fever. The two fatal cases were of the latter group.

The town had the ill luck in 1892 to have two epidemics of Milk Typhoid. Just at this moment we had cases of Scarlatina in the building, and unfortunately the Torbay Hospital was undergoing repairs, which practically excluded the possibility of admitting such cases. Consequently it became necessary to make some temporary provision for the treatment and isolation of the worst of the Typhoid cases. This was done by building a wooden structure, and which, after certain alterations have been made, will serve to meet any urgent necessity for years to come.

Of the Scarlatina cases, five came from houses of business, two from lodging houses, one from a dairy, four from the families of cabmen, one from the family of a public school mistress, two from a boys' orphanage, two from villas, and seventeen from homes of the working classes—total, 34.

The Typhoid cases were distributed as follows :—Villas, 2 ; girls' orphanage, 3 ; dairy-keeper, 1 ; house of business, 1 ; and homes of the working classes, 9—total, 16.

Of these 50 patients, 24 were attended by their own medical attendant ; 1 by the parish medical officer ; 5 by the Provident Dispensary ; and 20 were so poor as to be unable to pay for medical attendance, and this was provided at your expense.

The cost of working during the past twelve months will be seen from the following statement :—

EXPENDITURE.						£	s.	d.
Diet of Patients	...	...	...	...	...	171	3	7
Wages and Diet of Nurses...	...	...	...	...	...	115	19	0
Laundry	...	...	...	...	...	23	6	3
Curator	...	...	...	...	...	51	1	4
Medical Officer as Superintendent	...	...	...	...	...	28	8	9
Surveyor's Account...	...	...	...	...	...	13	15	4
Tradesmen's Accounts	...	...	...	...	...	26	13	1
Rent, Rates, and Insurance	...	...	...	...	...	13	14	10
Drugs	...	...	...	...	...	11	13	0
Paid for Medical Attendance	...	...	...	...	...	21	0	0
Conveyance of Patients	...	...	...	...	...	6	3	0
Coals, Coke, and Wood	...	...	...	...	...	32	13	0
Installation and Rent of Telephone	...	...	...	...	...	13	10	0
						<u>£529</u>	<u>1</u>	<u>2</u>

RECEIPTS.						£	s.	d.
Paid by Patients	...	...	...	...	...	30	15	9
Deficit...	...	...	...	...	...	498	5	5
						<u>£529</u>	<u>1</u>	<u>2</u>

It will be of interest to compare the cost of working in previous years with that of the past :—

First Report ...	30	Patients ..	Cost, £197	9	1	...	Deficit, £134	11	10
Second „ ...	35	„ ...	„ 311	0	1	...	„ 220	9	6
Third „ ...	25	„ ...	„ 395	9	0	...	„ 294	11	5
Fourth „ ...	10	„ ...	„ 212	9	9	...	„ 172	5	3
Fifth „ ...	11	„ ...	„ 175	4	11	...	„ 175	4	11
Sixth „ ...	12	„ ...	„ 245	4	10	...	„ 201	6	4
Seventh „ ...	8	„ ...	„ 214	5	6	...	„ 193	0	5
Eighth „ ...	11	„ ...	„ 259	15	6	...	„ 234	17	0
Ninth „ ...	50	„ ...	„ 529	1	2	...	„ 498	5	5

The cost of erecting the temporary hospital was £423 12s. 1d., and of furnishing £130 6s. 10d. Total, £553 18s. 11d.

The past year has been a very trying one, and at times a great strain has been put on your ordinary staff. I cannot speak too highly of the management of Mr. and Mrs. OSBORNE, and of the excellent services of your permanent nurse, Miss HUNT. All these have given perfect satisfaction to the patients, their friends, and the medical men attending the patients. The popularity gained by the Sanatorium goes a long way to overcome the annoyance and distress sometimes associated with isolation.

The Inventory has been gone through, and supplies of necessary things kept up. At the present moment the Sanatorium could take twelve scarlatina cases, two small-pox and ten typhoid cases; in all, twenty-four patients.

From October 29th, 1883, to March 25th, 1893, one hundred and ninety-two patients have been admitted.

I remain, Sirs,

Your obedient servant,

PAUL Q. KARKEEK, M.R.C.S & L.S.A.,

*Medical Officer of Health.*

Aug. 15th, 1893.





ANNUAL REPORT

OF

**The SANITARY INSPECTOR.**

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Municipal Offices, Torquay,

February, 1894.

TO THE WORSHIPFUL THE MAYOR, ALDERMEN, AND  
COUNCILLORS OF THE BOROUGH OF TORQUAY.

GENTLEMEN,

I beg to lay before you my Sixteenth Annual Report to the Urban Sanitary Authority, from which it will be seen that the progress of sanitary work in the Borough continues at the high rate to which I have called attention during the last few years.

Structural alterations of an important character form the main part of the work achieved, these having the effect of bringing the premises concerned up to the modern sanitary standard. It is to be noted that most of the houses operated upon had not called for my attention previously.

The work accomplished has been classified in the following manner :—

- 234 Thorough House Inspections were made, of which 105 were Villas. The Smoke Test was applied almost every day, and, on some occasions, four or five times daily.
- 136 New Sanitary Conveniences were fixed.
- 53 Old       ,,       ,,       were cleaned and repaired.
- 43 Defective Soil Pipes were put outside houses.
- 150 Drain and Soil Pipe Ventilators were erected.
- 30 Blocked Drains were cleared.
- 210 New Interceptors and Surface Traps were fixed.
- 26 Indoor Waste Pipes were cut off from Drains.
- 63 New sets of Pipe Drains were laid.
- 7 Masonry Drains were destroyed.
- 3 Cesspools were abolished.
- 18 Yards were Paved and Drained.
- 50 Offensive Accumulations were removed.
- 22 Pig and Fowl Nuisances were dealt with.
- 24 Bed Rooms and Clothing were fumigated.
- 96 Supplies of Disinfectants were distributed.
- 9 Back Premises were limewashed.
- 124 Flushing Cisterns were fixed to W.C.'s.
- 12 New Supplies of Drinking Water were provided.
- 20 Cisterns were cleaned and covered.
- 3 Underground Tanks were disused.
- 1 Polluted Well was condemned and destroyed.
- 15 Windows or Ventilators were provided for bed rooms.
- 7 Ashpits were drained and covered.
- 6 Overcrowding cases were abated.
- 3 Defective Rain Pipes were repaired.

These items make a total of 1,131 separate sanitary improvements, carried out in 504 premises, as against 1,154 operations in 537 houses during the year 1892, which was 25 per cent. above all previous years.

My services were placed at the disposal of the Medical Officer during the house-to-house inspection of Lower Union Lane. and I prepared a detailed report thereon.

The Common Lodging Houses, Marine Stores, and the Market and Slaughter House were frequently visited, the latter places causing considerable trouble by reason of bad construction and insanitary condition. The Market sanitary arrangements were carefully overhauled, and I am glad to report that the Company carried out all my suggested improvements.

The sanitary arrangements of two Hotels, and of the Cricket Ground Lodge were put in a satisfactory state,

The Dairies, Milkshops, and Cowsheds have been inspected, and certain important alterations in the drains of two of the principal Milkshops have been carried out at my instigation.

The year 1893 will be noted as that during which building operations on new houses have reached the lowest point for the last two decades ; only twenty-eight were surveyed, as compared with 75 in 1892, and 101 in the previous year.

Reconstructions of large public buildings have, however, been executed on an extensive scale, the principal being the Torbay Hospital and the National Provincial Bank. I went through these buildings very carefully, and compared them with the plans submitted to the Council, and I am bound to say that more creditable erections, to all concerned, it has never been my lot to survey.

The office work, comprising the entry in proper books of all transactions, reports, and copies of letters, still increases ; 69 preliminary notices were served, and 332 letters and private reports written, as against 81 notices and 324 letters in 1892.

Only eight legal notices were required, and no legal proceedings were instituted, thus proving that very little pressure is needed to secure compliance with sanitary requirements in the Borough ; in fact the reverse is the rule, as my services are sought after and my suggestions willingly carried out.

I am, Mr. Mayor and Gentlemen,

Yours obediently,

CHARLES MACMAHON, C. SAN. INST.,

*Sanitary Inspector & Building Surveyor.*



ABSTRACT OF METEOROLOGICAL OBSERVATIONS MADE AT TORQUAY DURING THE YEAR 1893.

Latitude 50°29' N.: Longitude 3°32' W. 286 feet above mean sea-level.

1893.	SUNSHINE.											CARY GREEN, TEMPERATURE										CHAPEL HILL TEMPERATURE.															RAINFALL.							1893.						
	SUNSHINE.											In shade. The Low-Level Station, 12ft. above mean sea-level.										In shade. The High-Level Station 286ft above mean sea-level. —IN SUN, Black Bulb in Vacuo.—ON GRASS.—															CARY GREEN. 12ft. above mean sea-level.													
	Possible Sunshine.	Actual Sunshine.	Percentage Actual of Possible.	Average amount 5-6 years.	Difference from average.	Morning Sunshine.	Afternoon Sunshine.	Greatest daily amount.	Possible Sunshine.	Per centage Actual of Possible.	Date.	Days on which Sun Shone.	Sunless Days.	Max. mean.	Min. mean.	Max. & Min. mean.	Range mean.	Highest.	Lowest.	Date.	Dry Bulb mean.	Wet Bulb mean.	Relative Humidity mean.	Cloud mean.	Max. mean.	Min. mean.	Max. & Min. mean.	Range mean.	Highest.	Date.	Lowest.	Date.	Difference of Mean Temperature between the High and Low-Level Stations.	Mean max.	Highest max.	Date.	Mean Solar Radiation.	Mean min.	Lowest min.	Date.	Total Amount.	Difference from Average.	Wet Days or falls of 0.01 inches or more.		Mean Wet Day rate of Rainfall.	Greatest Fall in 24 hours.	Date of Greatest Fall.			
January	H. M.	H. M.		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.		27th	21	10	44.7	35.8	40.3	8.9	53.1	23rd	21.0	3rd	39.8	38.1	86	6.6	43.6	35.3	39.5	8.3	51.6	29th, &c.	18.8	3rd	0.8	Higher at Cary Green	66.7	89.8	22nd	23.1	31.7	14.0	3rd	3.20	-0.33	14	0.23	0.91	28th	January	
February	260. 0	62. 55	24.2	68. 35	-5. 40	36. 5	26. 50	6. 30	8. 54	73.0	28th	22	6	49.8	39.9	44.9	9.9	56.0	7th	30.8	25th	44.6	42.4	83	7.0	47.9	39.0	43.5	8.9	54.6	7th	29.1	25th	1.4	"	"	82.2	101.3	13th	34.3	35.4	25.6	25th	4.66	+1.89	21	0.22	1.05	25th	February
March	276. 0	75. 10	26.9	80. 55	-5. 45	41. 25	33. 45	9. 5	10. 45	84.5	31st	29	2	53.7	41.0	47.4	12.7	59.4	30th	33.5	19th	48.4	45.3	78	4.0	53.8	40.0	46.9	13.8	60.9	31st	30.2	20th	0.5	"	"	100.5	116.8	21st	46.7	34.6	27.2	19th	0.17	-2.52	6	0.03	0.08	1st	March
April	364. 0	249. 5	68.2	142. 2	-8. 20	141. 5	139. 30	12. 40	14. 18	88.6	25th	30	0	59.5	45.5	52.5	14.0	70.1	26th	34.5	13th	58.4	48.1	67	3.0	61.1	43.1	52.1	18.0	70.9	26th	32.0	15th	0.4	"	"	112.6	121.0	20th	51.5	39.3	30.0	13th & 15th	0.41	-2.40	3	0.14	0.32	22nd	April
May	410. 0	279. 55	67.5	142. 2	-8. 20	141. 5	139. 30	12. 40	14. 18	88.6	11th	31	0	63.4	50.0	56.7	13.4	72.7	12th	43.3	21st	57.6	53.2	71	4.7	64.5	48.2	56.4	16.3	75.1	12th	41.2	22nd	0.3	"	"	113.5	124.4	26th	49.0	45.5	38.0	8th	1.14	-1.27	9	0.13	0.31	16th	May
June	475. 0	229. 5	48.2	207. 5	-22. 0	115. 15	113. 50	14. 1	15. 7	92.5	30th	30	0	68.4	53.9	61.2	14.5	79.2	19th	46.0	1st	63.2	56.9	66	3.9	69.8	51.7	60.7	18.1	82.5	19th	42.2	1st	0.5	"	"	119.3	130.5	19th	49.5	49.8	41.2	1st	0.71	-1.71	6	0.12	0.27	26th	June
July	486. 0	293. 55	60.5	282. 5	-11. 50	142. 45	151. 10	14. 39	16. 17	89.2	6th	28	3	68.5	57.2	62.9	11.3	76.9	2nd	52.6	28th	63.6	58.9	73	5.9	68.6	55.6	62.3	13.0	79.2	2nd	49.9	28th	0.6	"	"	113.3	131.2	2nd	44.7	51.8	45.4	1st	3.75	+0.92	16	0.23	1.22	4th	July
August	487. 0	292. 0	41.5	187. 20	+14. 40	93. 10	108. 50	14. 5	16. 4	87.7	15th	30	1	70.3	57.6	64.0	12.7	76.7	16th	49.8	6th	64.8	60.7	76	4.0	70.6	56.1	63.4	14.5	78.7	16th	48.1	6th	0.6	"	"	119.2	128.0	10th	48.6	53.6	46.0	27th	0.86	-2.02	10	0.09	0.17	3rd	August
September	443. 0	246. 20	55.6	192. 30	+53. 50	116. 50	129. 30	12. 50	14. 21	89.5	14th	28	2	65.4	52.0	58.7	13.4	74.5	6th	39.0	24th	60.2	56.3	76	5.3	65.0	50.3	57.6	14.7	75.0	14th	39.9	22nd, &c.	1.1	"	"	110.8	128.5	2nd	45.8	48.0	34.0	24th	1.27	-1.11	12	0.11	0.58	28th	September
October	373. 0	185. 0	49.5	157. 35	+27. 25	95. 5	89. 55	11. 50	12. 31	94.5	12th	30	1	58.7	47.0	52.9	11.7	64.7	21st	33.6	31st	53.4	50.6	81	5.0	58.1	45.9	52.0	12.2	64.7	21st	32.4	31st	0.9	"	"	100.5	116.2	1st	42.4	42.6	27.8	31st	2.84	-1.32	18	0.16	0.52	17th	October
November	327. 0	121. 10	37.1	122. 35	-1. 25	68. 5	53. 5	9. 20	10. 46	86.7	6th	23	7	50.3	40.3	45.3	10.0	60.8	3rd	30.0	23rd	45.1	42.7	82	6.6	48.1	38.8	43.5	9.3	59.2	3rd	28.6	23rd	1.8	"	"	74.3	100.2	3rd	26.2	35.8	26.0	23rd	1.85	-2.16	14	0.13	0.57	16th	November
December	264. 0	62. 50	23.8	62. 5	-0. 45	33. 30	29. 20	6. 35	9. 15	71.2	25th	25	6	49.1	38.8	43.9	10.3	55.5	13th	24.8	3rd	43.8	42.2	87	6.0	48.2	38.5	43.3	9.7	57.0	13th	23.5	3rd	0.6	"	"	66.8	89.8	3rd	18.6	34.4	21.5	31st	4.97	+1.62	16	0.31	1.23	12th	December
Year ..	4406. 0	2034. 45	46.2	1757. 25	+277. 20	1023. 20	1011. 25	14. 30	16. 15	89.2	June 30th	327	38	58.5	46.6	52.6	11.9	79.2	June 19th	21.0	Jan. 3rd	53.2	49.6	77	5.2	58.3	45.2	51.8	13.1	82.5	June 19th	18.8	Jan. 3rd	0.8	"	"	98.3	131.2	July 2nd	40.0	41.9	14.0	Jan. 3rd	25.83	-10.41	145	0.18	1.23	Dec. 12th	Year

THE INSTRUMENTS.

The Sunshine Recorder is JORDAN'S PHOTOGRAPHIC INSTRUMENT, and is placed on Chapel Hill, 286 feet above mean sea level, in Lat. 50° 29' N., Long. 3° 32' W., =14 min. after Greenwich mean time.

The Thermometers, by Casella, are divided on the stem, and verified at Kew Observatory, and are placed in Stevenson's double-louvre screens, 4 feet from the ground, over grass, and with the 5-inch Rain-gauges, also by Casella, are placed on Chapel Hill, 286 feet above mean sea-level, and on the Lawn at Cary Green, 12 feet above mean sea-level, the latter being read at 9 a.m. (*local time*) by Mr. CHARLES SHAPLEY, F. R. Met. Soc.

The Thermometer readings have the Kew corrections applied, and for finding the *Humidity* of the air Mariott's tables are used.

The service is organised and provided for by the Torquay Town Council. Some of the Instruments are lent to the Observer by the Torquay Natural History

Society. The Observations are published by the Royal Meteorological Society and the Meteorological Office.

The *Average* of Sunshine is computed from July, 1888, to December, 1893, and the *Average* of Rainfall is that of Mr. GLYDE'S Babbacombe Observations, viz., 15 years, from 1877 to 1891.

SUNSHINE.

In 1893 the Sun was above the horizon in this Latitude 4.406 hours. The actual amount of Sunshine received during 1893 was 2.034 hours 45 minutes, or equal to 46.2 per cent. of the Possible Sunshine.

The Sunshine actually received during 1893 exceeds the average by 277 hours 20 minutes. The Morning Sunshine was 1.023 hours 20 minutes, and the Afternoon Sunshine 1.011 hours 25 minutes, or an excess in favour of the Morning Sunshine of 11 hours 55 minutes.

The month in which the greatest amount of Sunshine was received was June, with 293 hours 55 minutes, or equal to 69.5 per cent. of the Possible

Sunshine. The month of April was, however, the sunniest month, if we take into account the lessened Possible Sunshine, by reason of shorter days. The total amount of Sunshine received in this month was 279 hours 55 minutes, or equal to 68.3 per cent. of the Possible Sunshine; therefore exceeding the month of June by 7.8 per cent. of actual sunshine received.

The remarkable feature of the beautiful Spring and Summer of 1893 was, as regards Sunshine, that from March 14th to July 18th, a period of 127 days, or about one-third of the whole year, there was not a day without Sunshine. The amount of bright Sunshine measured during this long continuous period was 1,073 hours 20 minutes, or an average daily amount of 8 hours 27 minutes.

The day upon which the greatest amount of Sunshine was measured was June 30th, with 14 hours 30 minutes of Sunshine, or equal to 89.2 per cent. of Possible Sunshine for that day. The 14th of September was, however, the sunniest day, if we take into account the lessened Possible Sunshine by reason of the

shortened days. The amount of bright Sunshine received on this day was 11 hours 50 minutes, or equal to 94.5 per cent. of the Possible Sunshine; therefore exceeding June 30th by 5.3 per cent. of actual Sunshine received.

During the Year there were 327 days on which the Sun shone, and 38 days on which no measurement was taken.

TEMPERATURE.

At the Cary Green or low-level Station (12 feet above sea-level), the *mean* of the Maximum Temperature for the Year was 58.°5, and the *mean* of the Minimum Temperature was 46.°6. The *mean* of the Maximum and Minimum together was 52.°6, and the *mean* Range of Temperature 11.°9. The highest Day Temperature was 79.°2 on June 19th, and the lowest Night Temperature 21.°0 on January 3rd. The *mean* of the Air Temperature (Dry-bulb Thermometer) for the Year was 53.°2, and the *mean* of the Evaporation Temperature (Wet-bulb Thermometer) was 49.°6,

giving a *mean* of Relative Humidity for the Year of 77 per cent.

At the Chapel Hill or high-level Station (286 feet above sea-level), the *mean* of the Maximum Temperature for the Year was 58.°3, and the *mean* of the Minimum Temperature was 45.°2. The *mean* of the Maximum and Minimum together was 51.°8, and the *mean* Range of Temperature 13.°1. The highest Day Temperature was 82.°5 on June 19th, and the lowest Night Temperature was 18.°8 on January 3rd.

The difference between the two Stations is therefore:—At Cary Green (12 feet) the *mean* of the Day or Maximum Temperature was 0.°2 *higher* than on Chapel Hill (286 feet), and the *mean* of the Night or Minimum Temperature at Cary Green was 1.°4 *higher* than on Chapel Hill. The *mean* of the Maximum and Minimum together was 0.°8 *higher* at Cary Green than on Chapel Hill, and the *mean* Range of Temperature was 1.°2 *less* at Cary Green than on Chapel Hill.

During the Year the *mean* of the Maximum Temperature in the Sun (Black Bulb Thermometer in

vacuo at Chapel Hill) was 98.°3. The highest Temperature registered in the Sun was 131.°2 on July 2nd.

The *mean* Solar Radiation for the Year was 40.°0.

The *mean* Minimum Temperature on the Grass (at Chapel Hill) for the Year was 41.°9. The lowest Temperature registered on the Grass was 14.°0. on January 3rd.

The *mean* of Cloud for the Year (0-10) was 5.2.

RAINFALL.

The Rainfall of the Year, as measured at Cary Green, was 25.83 inches. The difference of total Rainfall from the average was -10.41 inches. There were 145 days on which not less than -0.01 inch of Rain was measured. The *mean* Wet Day rate of Rainfall for the Year was 0.18 inches. The greatest fall in one day was 1.23 inches, on December 12th.

ALFRED CHANDLER, F. R. Met. Soc.

Chapel Hill Meteorological Observatory,  
January 15th, 1894.







